



UNIVERSITI PUTRA MALAYSIA

**POLICY ANALYSIS OF BEEF PRODUCTION SYSTEM
IN PENINSULAR MALAYSIA**

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**POLICY ANALYSIS OF BEEF PRODUCTION SYSTEM
IN PENINSULAR MALAYSIA**

By

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**Thesis Submitted in Fulfilment of the Requirement
for the Degree of Doctor of Philosophy
in the Faculty of Economics and Management
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October 2001



DEDICATED TO MY

PARENTS, LATE DR. MD. ASHRAF ALI AND LATE MRS. ASHRAF ALI

BROTHERS, AHSAN ALI AND ASAD ALI

DAUGHTER, FARZANA YASMIN

AND TO MY HUSBAND, DR. S. M. ZIQRUL HAQ CHOWDHURY

FOR THEIR PATIENCE, CONSTANT ENCOURAGEMENT AND SUPPORT

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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October 2001

Chairman: Zainal Abidin Bin Mohamed, Ph.D.

Faculty: Economics and Management

In order not to be dependent on foreign countries for beef, Malaysia needs to increase her beef production to attain self-sufficiency level in the near future. In doing so, she needs to analyze the effect of different alternative production and decision-making policies in beef production and achievement of self-sufficiency level in beef. Thus, the objectives of the study were to develop a system modeling for beef production decision-making, to evaluate the impact of production and trade policies on beef production, to determine the cost and return to government investment for importation of breeding stock and to suggest policy measures for beef production in Peninsular Malaysia.

Simulation matrix (SIMM) model was developed based on system approach methodology to analyze the objectives of the study. The SIMM model was used to simulate the female breeding stock, male breeding stock, male calves and female calves and slaughter and production components of the beef production system. The ex-post SIMM model for beef production system from 1960-1996 was used as a base to simulate the ex-ante component by varying the rate of policy variables such as different

calving, slaughter, mortality rates and the level of importation of female breeding stock. Thus, five SCENARIOS of different rates in decision-making variables were developed to analyze the impact of such variables on beef production in Peninsular Malaysia. SCENARIO 3 was found to be the most promising decision making strategy to attain self-sufficiency level at reasonable time frame and cost of investment. Under SCENARIO 3, at 76-80% calving rate, 5-7% slaughter rate, 1-2% mortality rate with 10000 heads/year, 5000 heads/year, 500 heads/year importation of beef cattle, dairy cattle and buffalo female breeding stock respectively, the results of BCR (1.96) and positive NPW show that beef production can be increased economically and 100% self-sufficiency can be achieved in the period 2011/2012 at lower government investment cost for importation. Whereas SCENARIOS 1, 2, 4 and 5 show the negative NPW and less than 1 BCR and 14%, 24%, 13% and 11% self-sufficiency rate respectively due to lower calving rate and importation of female breeding stock, higher slaughter and mortality rate indicating that are not economically acceptable.

Simulated results indicate that in order to maintain the higher level of self-sufficiency in beef, mortality rate and slaughter rate will have to be reduced. On the other hand, the rates of calving and importation of female breeding stock will have to be increased. The management of breeding stock is an important component in beef production system in order to achieve the level of self-sufficiency in beef.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan ijazah Doktor Falsafah

**ANALISA POLISI BAGI PENGELUARAN DAGING LEMBU
DI SEMENANJUNG MALAYSIA**

Oleh

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Untuk tidak terlalu bergantung kepada negara-negara luar bagi keperluan daging lembu, Malaysia mestilah meningkatkan pengeluaran daging lembu untuk mencapai tahap sara diri dimasa akan datang. Oleh itu, Malaysia mestilah menganalisa kesan keatas pelbagai alternatif polisi dalam pengeluaran daging lembu dan pencapaian tahap sara diri. Maka objektif kajian ini adalah untuk membentuk satu model yang berteraskan sistem bagi membuat keputusan untuk pengeluaran daging, mengkaji kesan pengeluaran, dasar perdangan keatas pengeluaran daging, menentukan kos dan pulangan keuntungan kepada pelaburan kerajaan bagi mengimpot stok pembiakan. Selain daripada itu kajian ini juga mencadangkan polisi yang bersesuaian untuk pengeluaran daging lembu di Semenanjung Malaysia.

Model Matrik Simulasi (SIMM) telah dibentuk berdasarkan kaedah pendekatan sistem untuk menganalisa objektif kajian ini. Model SIMM digunakan dimana komponen-komponen stok pembiakbakaan lembu jantan dan betina, anak lembu jantan dan betina,

penyembelihan dan pengeluaran disimulasikan dalam sistem pengeluaran daging. 'Ex-post' model SIMM digunakan sebagai simulasi asas bagi komponen 'ex-ante' dengan mempelbagaikan paras angkubah seperti kadar pembiakan, penyembelihan, kematian dan tahap impot untuk stok pembiakbakaan lembu betina. Untuk tujuan tersebut lima SENARIO telah dibentuk dengan mempelbagaikan paras angkubah pembuat keputusan bagi menganalisa kesan angkubah ini keatas pengeluaran daging lembu di Semenanjung Malaysia. Didapati, keputusan SENARIO 3 adalah yang terbaik sekali untuk mencapai objektif sara diri dalam jangkamasa dan kos pelaburan yang munasabah. Senario ini menjanakan 76-80% kadar pembiakan, 5-7% kadar penyembelihan dan 1-2% kadar kematian bagi 10000 ekor/tahun, 5000 ekor/tahun, 500 ekor/tahun untuk pengimpotan stok pembiakbakaan lembu pedaging, lembu tenusu dan kerbau masing-masing. Keputusan 'BCR' (1.96), 'NPW' yang positif menunjukkan bahawa pengeluaran daging lembu boleh di lakukan secara ekonomik dan tahap sara diri yang sepenuhnya dicapai pada tahun 2011/2012 dan penurunan impot pelaburan bagi pihak kerajaan. Sebaliknya, SCENARIO 1, 2, 4 dan 5 menunjukkan 'NPW' yang negatif dan 'BCR' kurang dari 1 dan pencapaian tahap sara diri yang rendah pada paras 14%, 24%, 13% dan 11% masing-masing. Ini adalah hasil daripada kadar pembiakan dan impot pembiakbakaan lembu betina yang rendah dan dimana kadar penyembelihan dan kematian lembu terlalu berlebihan maka SENARIO-SENARIO tersebut tidaklah ekonomik.

Keputusan simulasi menunjukkan bahawa untuk mengekalkan kadar sara diri yang tinggi, kadar kematian dan penyembelihan mestilah dikurangkan dan kadar pembiakan

anak lembu dan impot stok pembiakbakaan lembu betina mestilah ditingkatkan. Oleh itu pengurusan stok pembiakbakaan adalah komponen yang sangat penting dalam sistem pengeluaran daging untuk mencapai tahap sara diri yang sepenuhnya.

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I certify that an Examination Committee met on 13th October to conduct the final examination of Fauzia Yasmin on her Doctor of Philosophy thesis entitled “Policy Analysis of Beef Production System in Peninsular Malaysia” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

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